

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A receiver for receiving data comprising:
an edge processor operative to make decisions using a plurality of edges of a received data stream;
a multi-phase clock outputting a plurality of clock phases; and
a digital averager coupled to the edge processor and the multi-phase clock and operative to select one of the plurality of clock phases for use by the edge processor, wherein said digital averager includes a barrel shifter comprising
 - (i) a finite length;
 - (ii) at least one set of reference points corresponding to the plurality of phases of the multi-phase clock, said at least one set of reference points being disposed along said finite length; and
 - (iii) a movable pointer for selecting one of said reference points in said set of reference points in response to a signal, wherein said movable pointer moves from a current position in said set of reference points to a new position in said set of reference points based on a characteristic of said signal.
2. (Canceled)

3. (Canceled)
4. (Currently Amended) The receiver according to claim 3 1, wherein said finite length of said barrel shifter describes a circle.
5. (Currently Amended) The receiver according to claim 3 1, wherein said at least one set of reference points comprises a first set and a second set.
6. (Original) The receiver according to claim 5, wherein said first set comprises a set of reference points corresponding to the plurality of phases of multi-phase clock and said second set of reference points comprises a plurality of midpoints of said first set of reference points.
7. (Currently Amended) The receiver according to claim 3 1, wherein said movable pointer moves bi-directionally.
8. (Currently Amended) The receiver according to claim 3 1, wherein said movable pointer moves right and left.
9. (Currently Amended) The receiver according to claim 3 1, wherein said signal corresponds to one of the plurality of edges of the received data stream.
10. (Currently Amended) The receiver according to claim 3 1, wherein said finite length of said barrel shifter corresponds to a time interval of one unit interval.

11. (Currently Amended) A device for tracking phase or frequency comprising:
a clock generator outputting a plurality of clock phases;
a digital averager to receive data corresponding to a plurality of edges of an input data waveform and to generate a control signal in response to said input data waveform, wherein said digital averager comprises a barrel shifter that is operative to select one of the plurality of clock phases for use in a subsequent decision process, said barrel shifter further comprising:

- (i) a finite length;
- (ii) at least one set of reference points corresponding to the plurality of phases of the multi-phase clock, said at least one set of reference points being disposed along said finite length; and
- (iii) a movable pointer for selecting one of said reference points in said set of reference points in response to a signal, wherein said movable pointer moves from a current position in said set of reference points to a new position in said set of reference points based on a characteristic of said signal; and
a tracking clock generator coupled to the digital averager to receive said control signal and correspondingly adjust a phase of the clock generator.

12. (Canceled)

13. (Canceled)

14. (Currently Amended) The device according to claim 13 11, wherein said finite length of said barrel shifter describes a circle.

15. (Currently Amended) The device according to claim ~~13~~ 11, wherein said at least one set of reference points comprises a first set and a second set.
16. (Original) The device according to claim 15, wherein said first set comprises a set of reference points corresponding to the plurality of phases of the multi-phase clock and said second set of reference points comprises a plurality of midpoints of said first set of reference points.
17. (Currently Amended) The device according to claim ~~13~~ 11, wherein said movable pointer moves bi-directionally.
18. (Currently Amended) The device according to claim ~~13~~ 11, wherein said movable pointer moves right and left.
19. (Currently Amended) The device according to claim ~~13~~ 11, wherein said signal corresponds one of the plurality of edges of the input data waveform.
20. (Currently Amended) The device according to claim ~~13~~ 11, wherein said finite length of said barrel shifter corresponds to a time interval of one unit interval.
21. (Canceled)

22. (Canceled)

23. (Canceled)